



# ***Why CHP now?***

## ***Identifying Opportunities and Realizing Benefits***

***Kim Crossman***

*CHP Opportunities for Las Vegas Casinos  
Las Vegas, Nevada*

*September 11, 2006*

# The CHP Champion



# Issues That Impact Us All: Energy, Environment, Economics

- Impact of energy on environment/ climate change
- Developing countries and growing population
- Geopolitical security impacts of fossil energy supply
- Availability and reliability of energy supply
- Critical infrastructure support
- Economic development/ growth
- Retention of business/ jobs
- Cost of electricity and natural gas
- Protection from catastrophic loss due to utility disruption

# Political Solutions for Public Problems

- Clean DG/ CHP projects bring the benefits of efficiency and clean/ renewable supply and are part of the solution to all of these issues.
- World, National, State and Local policy efforts currently underway to facilitate clean energy:
  - Utility regulation, market structure and rate design
  - Environmental regulations and markets
  - Legislated incentives for efficiency and renewables
  - Research and development
  - Market transformation activities

# Nevada Policies for Clean DG/ CHP

- Nevada Power Company Large Standby Service Rider
- Green Buildings Property Tax Abatement/ LEED
- Standardized Interconnection Standards (up to 20 MW)



# Nevada Policies for Renewably Fueled Clean Energy

- Renewable energy systems property tax exemption (NRS 361)
- Net metering – AB 236 applies to renewables up to 150 kW
- Nevada Energy Portfolio Standard – includes waste heat-first CHP

# Coordinated Policies Enable Clean Energy

- For best results, policies should be harmonized/ coordinated across various government/ regulatory entities to achieve common policy goals.
- These policies will only produce results if barriers are cleared, markets for clean energy are enabled and projects are successfully deployed at the site level.

# Bringing It Down To Earth

- The site/ investor will require quantifiable benefits (\$) and manageable risks to justify private investment. Where this occurs, CHP is sustainable, bringing economic value to the site while providing coincident societal and environmental benefits.
- But, not all sites are good for CHP. CHP must fit technically, operationally and economically into the site, so....



# Identifying Opportunity

- Is CHP even worth considering?
  - Are there any operational savings at all?
  - Basic CHP Economics – spark spread
- Is CHP potentially compelling?
  - Are there other values or cost offsets which will positively affect the economics of the project?
  - Needs Assessment

# Is CHP Worth Considering?

## Cost to Operate Example

### Operating Assumptions

CHP Electric Efficiency, %	34.0%
CHP Power to Heat Ratio	0.9
Displaced Thermal Efficiency	80.0%
Thermal Utilization, %	90.0%
Incremental CHP O&M Costs, \$/kWh	\$0.0100
CHP Fuel Cost, \$/MMBtu	\$8.00
Displaced Thermal Fuel Cost, \$/kWh	\$8.00

### Operating Cost to Generate

CHP Fuel Costs, \$/kWh	\$0.0803
Thermal Credit, \$/kWh	(\$0.0341)
Incremental O&M, \$/kWh	\$0.0100

*Operating Costs to Generate Power, \$/kWh*

*\$0.0562*

# Is Your Casino a Good Candidate for CHP?

- Do you pay more than \$.07/ kWh for electricity?
- Are you concerned about high or rising utility costs?
- Are you considering adding or replacing backup generators?
- Does your resort or casino have a central chilled water system?
- Are you planning an expansion, new construction or major retrofit of your resort or casino's HVAC system?
- Are you interested in reducing the environmental impact of your hotel or casino's operations?

# For More Information

## Contact:

Kim Crossman

Combined Heat and Power Partnership

U.S. Environmental Protection Agency

[crossman.kim@epa.gov](mailto:crossman.kim@epa.gov)

ph.: (202) 343-9388

fax: (202) 343-2208

<http://www.epa.gov/chp>